Map 345. *Lybius minor, L. melanopterus.* Delete the registration of *minor* at c 14° S, 31° E, east of the Luangwa River (in fact at Mbala, formerly Abercorn, cf. Benson *et al.* 1971, Bds Zambia: 379).

Map 356. *Pogoniulus olivaceus.* There is an additional record of *woodwardi* from Nchingidi at about 10° S in coastal Tanzania (Peters & Loveridge 1942, *Bull. Mus. Comp. Zool.* 89: 241).

Map 359. *Pogoniulus pusillus* superspecies. The symbols for *pusillus* and *chrysoconus* are transposed in the map caption.

Map 361. Column 2, line 10 of text. For "*subsulphureus*" read "*chrysoconus*".

Page 380. Add footnote reference as follows: Map 99. 1. Martin & Martin 1976, *Bokmakierie* 28: 70–72.

Page 381. Add footnote references as follows:

Map 183. 1. Wolters, *loc. cit.*
2. Dowsett 1977, *Scopus* 1: 73–78.
3. Clancey 1964, *Bds Natal & Zululand*: 156–157.
4. Sessions 1975, *Bull. E.A.N.H.S.*, April: 46.
5. Praed & Grant 1970, *Bds W.C. & W. Africa* 1: 257.

Map 240. 1. Clancey 1973, *Durban Mus. Novit.* 10: 1–11.

Page 383. Map 377. Alter reference 4 to: Benson 1952, *Ostrich* 23: 152.

Address: Dr. D. W. Snow, British Museum (Natural History), Tring, Herts.

Some additional observations on haematozoa of birds in the Mascarene Islands

M. A. Peirce

Received 4 January 1979

The results of the 1974 survey of haematozoa of birds in the Mascarene Islands (Peirce *et al.* 1977) indicated the need for more material, especially from Rodrigues where only a small sample had been obtained.

Recently, it has been possible to examine a small number of blood smears from sea-birds on Round Island taken by the Edinburgh University Expedition during August 1978, and a larger sample from Rodrigues and Mauritius by A. S. Cheke in September 1978, the results of which are reported here. Data on localities and details of the preparation, staining and subsequent examination of blood smears are given in Peirce *et al.* (1977), the only exception being that from sea-birds blood was drawn from the tibial vein.

Results

A total of 69 birds was examined (Table 1) of which 16 were found to harbour haematozoa. No parasites were seen in any of the birds from Round Island. From Solitude, on Rodrigues, 12 birds (27.9%) were observed to be parasitized with *Leucocytozoon* or *Plasmodium*. The *Leucocytozoon* parasites in *Foudia flavicans, F. madagascariensis* and *Passer domesticus* were of low parasitaemias but thought to be *L. fringillinarum*.

The *Plasmodium* parasites were particularly interesting. None of the birds had a high level of parasitaemia and most parasites seen were trophozoites or schizonts, all of which were considered to represent one species only. In the erythrocyte the parasite usually occupies a polar position although some are

Table 1

Blood parasites of birds on Rodrigues, Mauritius and Round Island (August–September 1978)

Bird species	No. examined/ No. infected	Parasites found L	P
RODRIGUES			
COLUMBIDAE:			
Barred Ground Dove *Geopelia striata*	2/0	–	–
PLOCEIDAE:			
Madagascar Fody *Foudia madagascariensis*	17/3	2	1
Rodrigues Fody *F. flavicans*	13/4	1	3
House Sparrow *Passer domesticus*	11/5	4	2
MAURITIUS			
COLUMBIDAE:			
Barred Ground Dove *G. striata*	2/0	–	–
ZOSTEROPIDAE:			
Mascarene Grey White-eye *Zosterops borbonica mauritiana*	3/3	3	–
Mauritius Olive White-eye *Z. chloronothos*	1/1	1	–
PLOCEIDAE:			
Madagascar Fody *F. madagascariensis*	1/0	–	–
ROUND ISLAND			
PROCELLARIIDAE:			
Wedge-tailed Shearwater *Puffinus pacificus*	5/0	–	–
Trinidade Petrel *Pterodroma arminjoniana*	5/0	–	–
PHAETHONTIDAE:			
White-tailed Tropicbird *Phaethon lepturus*	5/0	–	–
Red-tailed Tropicbird *P. rubricauda*	4/0	–	–
Totals	69/16	11	6

L = *Leucocytozoon* P = *Plasmodium*

lateral; the host cell nucleus is frequently displaced, either to the periphery of the cell or rotated through 90°; schizonts are irregular in shape (one seen as a horse-shoe), fairly small with 4 large merozoites; the pigment granules are round, usually 3 (range 2–5), one usually larger than the others, clumped together peripherally; gametocytes are scanty but appear round or slightly irregular (too few for proper designation). The identity and status of this species is still undetermined.

One *P. domesticus* had a mixed infection with *L. fringillinarum* and *Plasmodium* sp.

All 3 *Zosterops borbonica* and one *Z. chloronothos* from Alexandra Falls, on Mauritius, were infected with *L. zosteropis*.

In addition to the data given in Table 1, 2 birds, both *F. flavicans,* were found to be parasitized with a Rickettsia-like organism similar to that observed in other birds in 1974. One of the birds was a re-trap from 1974 when no infection was detected.

Discussion

The sample from Rodrigues was larger than before (43:16) and there were some differences in the parasites observed, particularly the absence of trypanosomes. These were found in a single *F. madagascariensis* in December 1974, whereas at that time no plasmodia were seen. These differences may reflect seasonal fluctuations in patency corresponding to vector activity, or merely relapses rather than initial infections; low parasitaemias suggest the latter is not the case.

Although *Plasmodium* spp. are frequently difficult to identify, even with

heavy infections, due to morphological differences within strains of the same species, the morphology of the present parasite does not appear to resemble any known species, and especially those previously observed on Mauritius (*P. relictum* and *P. vaughani*). Further work is indicated to elucidate the identity and status of this parasite.

Some species of *Leucocytozoon* can also exhibit a variable morphology but gametocytes of *L. fringillinarum* are usually round. Although no such gametocytes were seen in any of the large number of *Zosterops* infected with *L. zosteropis* examined in 1974, some other passerine species infected with *L. fringillinarum* did have a few gametocytes more closely resembling *L. zosteropis*. At the time these were considered to be abnormal *L. fringillinarum* because *L. zosteropis* was thought to be restricted to the Zosteropidae. However, some gametocytes in the recent material from Rodrigues also show a morphological resemblance to *L. zosteropis*, even though no *Zosterops* occur on the island. This raises the question as to whether *L. zosteropis* can and does occur in other species. Observations made on present and past material suggest that *Zosterops* are immune to *L. fringillinarum* whereas other passerine species may be susceptible to infection with *L. zosteropis*. The work of Bennett & Cameron (1975), who showed that mixed infections of *L. fringillinarum, L. dubreuili* and *L. majoris* are possible, does give some validity to the possibility of a similar situation occurring in the Mascarenes. Those species of *Leucocytozoon* whose vectors are known are, with one exception, transmitted by simuliids, and in Mauritius and Réunion only one species is known, *Simulium ruficorne* (Peirce *et al.* 1977). A. M. Hutson (British Museum (Natural History) *pers. comm.*) confirms that *S. ruficorne* also is the only species known from Rodrigues, but adds that recent material collected in Réunion suggests that a second species may be present. Therefore, it seems likely that *S. ruficorne* is the vector of all three species of *Leucocytozoon* known to occur in the Mascarenes (*L. fringillinarum, L. marchouxi* and *L. zosteropis*), at least on Mauritius and Rodrigues. Further, it is possible that in areas inhabited by several bird species, some vectors may be harbouring development of more than one species of *Leucocytozoon*. Thus in biting a new host a vector could transmit sporozoites of more than one species, which would account for the apparent infection of some ploceids with *L. zosteropis*. It can be postulated that probably since the *Zosterops* are endemic species, *L. zosteropis* has evolved in this genus. Other avian species introduced into the Mascarenes probably brought infections such as *L. fringillinarum* and *L. marchouxi* with them, and the single simuliid vector has been able to adapt to transmitting both the established species (*L. zosteropis*) and those introduced. This would possibly explain the low infection rates with *Leucocytozoon* in species other than *Zosterops,* since an evolutionary pattern is probably still in the process of evolving. Since the endemic ploceids exist in relatively small numbers by comparison with the *Zosterops*, probably these have not played any significant role in the development of host-parasite-vector relationships.

This intriguing situation suggests that a more intensive survey is required, including collection of data on seasonal activity and transmission studies.

The negative results from the sea-birds on Round Island are probably due to a too small sample rather than an absence of parasites in the population. The only previous samples from Indian Ocean sea-birds (Lowery 1971, Peirce & Feare 1978) indicate that infection rates are usually low.

Acknowledgements: I am indebted to A. S. Cheke for the material from Rodrigues and Mauritius, and to A. S. Gardner for the material from Round Island collected by the Edinburgh University Expedition.

References:
Bennett, G. F. & Cameron, M. F. 1975. Mixed infections of species of *Leucocytozoon* in individual birds from Atlantic Canada. *J. Parasit.* 61: 1091–1095.
Lowery, R. S. 1971. Blood parasites of vertebrates on Aldabra. *Phil. Trans. Roy. Soc. Lond.* B.260: 577–580.
Peirce, M. A., Cheke, A. S. & Cheke, R. A. 1977. A survey of blood parasites of birds in the Mascarene Islands, Indian Ocean, with descriptions of two new species and taxonomic discussion. *Ibis.* 119: 451–461.
Peirce, M. A. & Feare, C. J. 1978. Piroplasmosis in the Masked Booby *Sula dactylatra melanops* in the Amirantes, Indian Ocean. *Bull. Brit. Orn. Cl.* 98: 38–40.

Address: M. A. Peirce, 6 Barrie House, Hartland Road, Addlestone, Surrey KT15 1JT.

The Grey Sunbird *Nectarinia veroxii* in southern Malawi

by D. B. Hanmer

Received 18 December 1978

Benson & Benson (1977: 188) suggest that *Nectarinia veroxii* might occur very sparsely in the lower Shire valley in Malawi and draw attention to its occurrence in the lower Zambezi valley (see also Clancey 1971: 109). This has now been confirmed, since on 9 November 1978 at Nchalo, 16° 16′ S, 34° 55′ E, I netted (and after study released) a sunbird unquestionably of this species.

Description: Upperparts, from head to upper tail-coverts, and upper wing-coverts, dark grey (head slightly darker) with pale bluish green metallic sheen. Sides of head lighter grey, shading into pale grey on underparts as a whole (slight tinge of yellowish on lower abdomen and under tail-coverts). Under wing-coverts white. Flash on each side of chest red, with two yellow feathers on each side. Remiges and rectrices brownish grey, with bluish sheen on upper surface. Eye dark brown. Bill fairly well curved, black, with a bright orange swelling on each side at base; feet black.

Measurements and weight: Wing 55, tail 39, culmen from skull 21, tarsus 16 mm. Weight 9·1 g.

The bird was evidently immature, as indicated by the swellings at the base of the bill and the tinge of yellowish on the lower abdomen (Mackworth-Praed & Grant 1963: 505 write of the young bird being washed with yellowish below). Also, it was in heavy body moult, the metallic feathers not fully grown.

It can be safely assumed that the subspecies at Nchalo is *N. v. fischeri*, and that this particular individual, wing 55 mm, was a female (see for example Mackworth-Praed & Grant (1963), White (1963: 81), Clancey (1971: 109)). Again for example, for the nominate form Mackworth-Praed & Grant give wing 62–68 mm in the male, 56–60 mm in the female, as against *fischeri* respectively 61–63, 55–56 mm. The pectoral flashes are usually described as red (as by Clancey 1964: 434). However, Mackworth-Praed & Grant describe them as red and yellow, so that the presence of a little yellow in the Nchalo specimen is not surprising. Furthermore, of 42 specimens of the species as a whole in the British Museum (Natural History), the Bensons (pers. comm.) found